

- Joy, J. E. and McCoy, L. E. 1975. Comparison of Shell Dimensions and Viscera Mass Weights in *Corbicula manilensis* (Philippi, 1844). *The Nautilus* 89(2):51-54.
- Sickle, J. B. 1979. Population Dynamics of *Corbicula* in the Altamaha River, Georgia. In J. C. Britton, ed., *Proceedings, First International Corbicula Symposium*. The Texas Christian University Research Foundation, Ft. Worth, Texas.
- Stern, E. M. 1976. The Freshwater Mussels (Unionidae) of the Lake Maurepas-Pontchartrain-Borgne Drainage System, Louisiana and Mississippi. Ph.D. Thesis, Louisiana State University, Baton Rouge, La.

NOTES ON SPECIES OF *BROCCHINIA* (GASTROPODA: CANCELLARIIDAE)

Richard E. Petit¹

Research Associate
Department of Invertebrate Zoology
National Museum of Natural History
Smithsonian Institution
Washington, D.C. 20560

ABSTRACT

Available replacement names are discussed for Voluta mitraeformis Brocchi, 1814, the type species of Brocchinia Jousseaume, 1887, and a primary junior homonym of Voluta mitraeformis Lamarck, 1811. Cancellaria pusilla Adams, 1869 is also preoccupied. This Recent species is redescribed as Brocchinia clenchi, n. sp.

Voluta mitraeformis Brocchi, 1814, a well-known cancellariid of the European Tertiary, is the type species of the genus *Brocchinia* Jousseaume, 1887. Although this taxon is frequently cited, its status as a junior primary homonym of *Voluta mitraeformis* Lamarck, 1811 has been noted in the literature only by Malatesta (1974:376) and Davoli (1982:61).

Malatesta (1974:377) considered *Cancellaria pusilla* H. Adams, 1869 to be available as a replacement name for the preoccupied *Voluta mitraeformis* Brocchi, although he considered the Recent and Tertiary populations to be separable. He further stated that the "fossil subspecies" (*sottospecie fossile*) had as an available name *Cancellaria cerithiopsis* Almera & Bofill, 1887 (*sic*). Malatesta's conclusions are incorrect as *C. pusilla* H. Adams is not an available name, being a junior primary homonym of *Cancellaria pusilla* Sowerby, 1832, and *C. cerithiopsis*

Almera & Bofill dates from 1898, not 1887. Earlier synonyms of *V. mitraeformis* Brocchi exist, as shown below.

Davoli (1982:61) stated that *Voluta mitraeformis* Brocchi, 1814 and *Voluta mitraeformis* Lamarck, 1811 should not be regarded as primary homonyms inasmuch as Brocchi pointed out that his species belonged to Lamarck's genus *Cancellaria*. Davoli referred to the Preamble of the International Code of Zoological Nomenclature in his plea for retention of Brocchi's *V. mitraeformis*, but the applicable portion of the Code in this instance is Article 60a which states: "A junior homonym *must* be rejected . . ." (*italics added*). This is unequivocal.

Brocchinia Jousseaume, 1887

Type, by subsequent designation of Sacco, 1894, *Brocchinia mitraeformis* (Brocchi) (= *Voluta mitraeformis* Brocchi, 1814 non *Voluta mitraeformis* Lamarck, 1811; = *Brocchinia parvula tauroparva* Sacco, 1894).

Brocchinia has been cited as a subgenus of *Narona* H. & A. Adams, 1854 by various authors (see synonymy in Malatesta, 1974:377).

¹Mailing address: P.O. Box 30, North Myrtle Beach, SC 29582.

The type of *Narona* is *Cancellaria clavatula* Sowerby, 1832 from the tropical eastern Pacific. There is no evidence for a subgeneric relationship between the two genus-level taxa. *Narona* is characterized by a somewhat tabulate shell having a distinct anterior canal; its columella bears two strong, sharp folds, the posterior one being superior. *Brocchinia* has a small non-tabulate shell with a rounded anterior; the short siphonal canal evidenced only as a slight curving of the columella; its two columellar folds are weak and rounded.

Brocchinia parvula parvula (Beyrich, 1856)

Synonymy—

Cancellaria parvula Beyrich, 1856:58, pl. 3, figs. 82a-b.

Cancellaria bicarinata Hörnes & Auinger, 1890:281, pl. 33, figs. 16a-c.

Brocchinia mitraeformis parvula (Beyrich), Janssen, 1983:9, pl. 1, figs. 5-7; pl. 5, fig. 3, text-fig. 4.

Cancellaria parvula Beyrich is apparently the earliest named taxon considered to be a synonym or subspecies of *Voluta mitraeformis* Brocchi, and therefore becomes the nominotypical subspecies of the species group (I.C.Z.N. Article 47). This German Miocene species was cited by Glibert (1952:130, pl. 9, fig. 16; 1960:4) as a form of *C. mitraeformis* (Brocchi), his figure agreeing well with Beyrich's original figures. *Brocchinia parvula* has been treated as a valid species, separable from *B. mitraeformis*, by Kautsky (1925:137), Sacco (1894:70) and Seiber (1936:93). Davoli (1982:61) mentions *C. parvula* in his discussion but does not include it in his synonymy of *B. mitraeformis*. Malatesta (1974:376), in his synonymy, lists Kautsky's citation of *B. parvula* but does not list the original description, a possible indication that he considered the two to be separable. In the most recent paper treating the subject, Janssen (1983:9, 10) considers *B. parvula* to be a subspecies of *B. mitraeformis* (Brocchi) and states that *B. parvula* occurs in the Mediterranean Pliocene as well as in the northern European Miocene. This interpretation of the relationship between *B. parvula* and *B. mitraeformis* agrees with this writer's opinion.

Brocchinia parvula tauroparva Sacco, 1894

Synonymy—

Voluta mitraeformis Brocchi, 1814:645, pl. 15, fig. 13 (non *Voluta mitraeformis* Lamarck, 1811:73).

Brocchinia mitraeformis var. *tauroparva* Sacco, 1894:68, pl. 3, fig. 82.

Narona (*Brocchinia*) *mitraeformis* (Brocchi), Davoli, 1982: 61, pl. 7, figs. 3-6.

Sacco (1894:68-70) named eight varieties of *Brocchinia mitraeformis* (Brocchi) from the Italian Pliocene. The first of these, *Brocchinia mitraeformis tauroparva*, is not distinct from the typical form, and is here considered to be a subjective synonym of *B. mitraeformis* (Brocchi). *Brocchinia tauroparva* (Sacco) thus replaces the preoccupied *V. mitraeformis* Brocchi.

Brocchinia clenchi, n. sp.

Figs. 1-4

Synonymy—

Cancellaria pusilla H. Adams, 1869:274, pl. 19, fig. 12 (non

Cancellaria pusilla Sowerby, 1832:6, fig. 34).

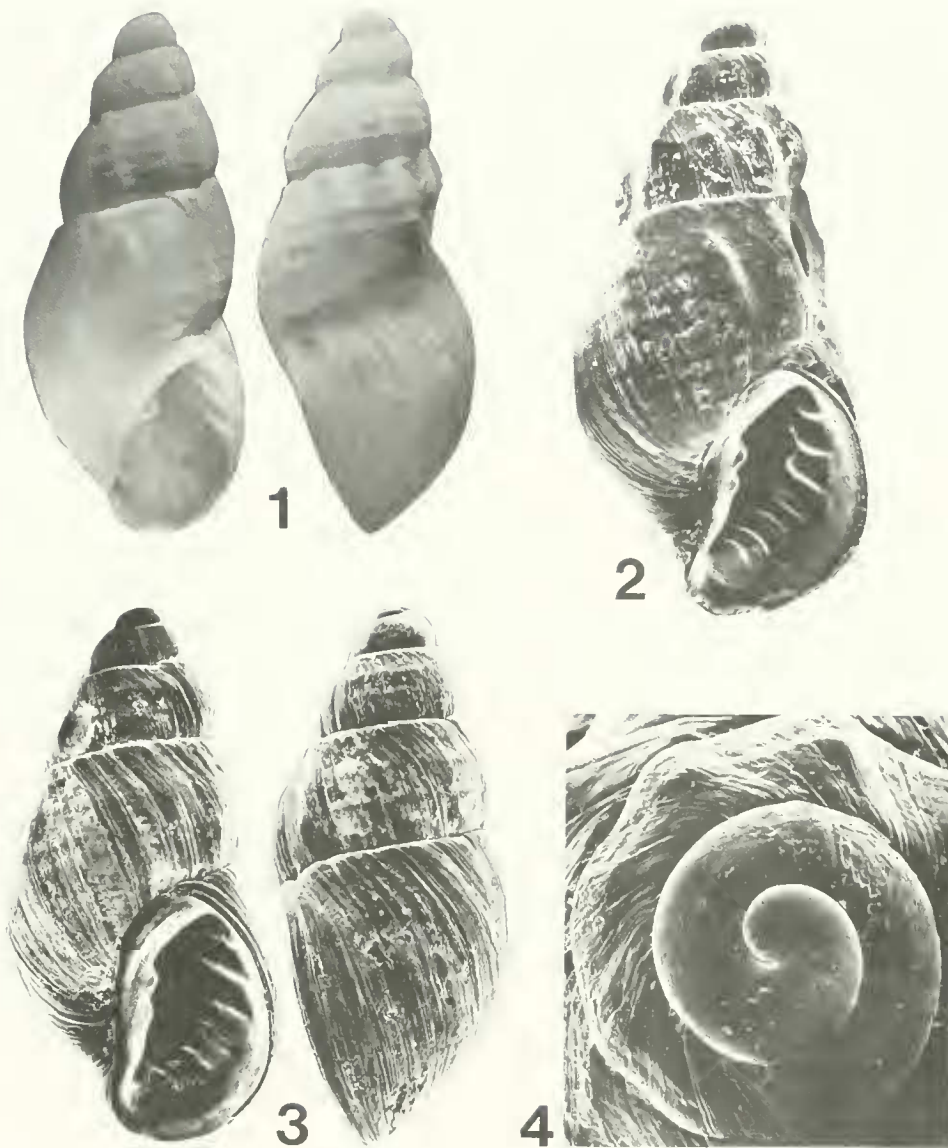
Cancellaria mitraeformis Brocchi, Jeffreys, 1885:49.

Narona (*Brocchinia*) *pusilla* (H. Adams), Nordsieck, 1968: 151, pl. 25, fig. 87.30.

Description—Paucispiral nucleus smooth, heliciform, consisting of about 1½ whorls; transition from protoconch to teleoconch almost imperceptible. Faint peripheral spiral cords arise midway on the first postnuclear whorl. The spiral sculpture consists of 3 to 5 extremely weak cords, with 3 usually visible on the spire whorls, and 5 or so on the body whorl. Axial sculpture, when present, consists only of weak nodes on the periphery that are crossed by the spiral cords. Suture distinct, slightly impressed. Teleoconch of about 4 whorls; nonumbilicate. Aperture ovate with a weak but noticeable columellar callus. Columella with two distinct, rounded folds of approximately equal size, the posterior one being slightly larger and more pronounced. Siphonal canal indicated by the angled base of the columella and a minute depression in the base of the aperture. Outer lip prosocline, usually denticulate within. The denticles, which do not extend to the edge of the lip, vary in strength and number. Shell white or horn colored. Animal unknown.

Type Material: Holotype, 4.5 mm × 2.3 mm (USNM 849002); Paratype, 5.2 mm × 2.6 mm (USNM 189694); Paratype, BM(NH) 1855.4. 4.202, 6.0 mm × 2.5 mm (possibly the type of *C. pusilla* Adams).

Type locality: Josephine Bank, 340-430 fms. Josephine Bank is situated at approximately



FIGS. 1-4. *Brocchima clenchi* new species. 1, Paratype, BM(NH) 1855.4.4.202, Oratova, Canary Islands, 15 \times . 2, Paratype, USNM 189694, Josephine Bank, 621-786 m, 20 \times . 3, Holotype, USNM 849002, Josephine Bank, 621-786 m, 20 \times . 4, Apical view of protoconch of holotype, 65 \times .

37°N, 14°W, due West of the southern tip of Portugal. The type and paratype in the USNM are from the Jeffrey's collection.

Etymology: This species is respectfully dedicated to the memory of the late Dr. William J. Clench.

Discussion: This Recent species was previously described as *Cancellaria pusilla* Adams, 1869, but that name is preoccupied by *C. pusilla* Sowerby, 1832. Jeffreys (1885:49) placed *C.*

pusilla Adams in the synonymy of *C. mitraeformis* (Brocchi), while Sykes (1911:332), Harmer (1918:396) and Dautzenberg (1927:73) considered the Recent species to be distinct.

The Recent *B. clenchi* is easily separable from the Tertiary species by its much smaller size and by its comparatively weak sculpture. The illustration accompanying Adams' description of *C. pusilla* is misleading, as the fine, almost indistinct spirals are shown to be quite strong.

The drawings of Nordsieck (1968:pl. 25, fig. 87.30; 1979:pl. 37, fig. 6) are too poor to be recognizable. Although included by Nordsieck & Talavera (1979:152) with the notation that its occurrence in the Canaries may be accidental, specimens have now been found in fish traps in Tenerife South at a depth of 43 m (Talavera, pers. comm.).

As the type of *C. pusilla* Adams cannot be positively identified, the species has been re-described so that a holotype can be designated, rather than simply proposing a *nomen novum*. The BM(NH) specimen listed as a paratype is from the R. M. McAndrew collection.

Acknowledgments

This paper would not have been possible without considerable assistance. Dr. Franco Davoli, Università di Modena, Italy, furnished a translation of his work, and corresponded regarding the desirability of retaining Brocchi's taxon. Mr. Piero Piani, Bologna, Italy, furnished translations, comments and literature.

Mrs. Kathie Way, British Museum (Natural History), London, located the possible type of Adams' *C. pusilla* and made it available for study.

The late Dr. Joseph Rosewater, National Museum of Natural History, Washington, D.C., made the Jeffreys specimens available and located pertinent references.

Dr. Francisco G. Talavera, Museo Insular de Ciencias, Tenerife, Canary Islands, furnished information and literature.

Dr. A. G. Beu, N.Z. Geological Survey, Lower Hutt, New Zealand, read and commented on an early draft of this paper.

Dr. M. G. Harasewych, National Museum of Natural History, Washington, D.C. made the photographs, prepared the plate, and reviewed the manuscript.

The cooperation and assistance of all is gratefully acknowledged.

LITERATURE CITED

- Adams, H. 1869. Descriptions of a new genus and fourteen new species of marine shells. *Proc. Zool. Soc. London*, 1869:272-275, pl. 19.
- Adams, H. & A. 1853-1858. *The genera of Recent Mollusca*. 3 vols. London.
- Almera, J. & A. Bofill. 1898. Moluscos fosiles recogidos en los terrenos pliocenicos de Cataluna. *Bol. Com. Mapa geol. Espana*, IV (ser. 2): XII + 223, 14 pls., Madrid.
- Beyrich, E. 1856. Die Konchylien des norddeutschen Tertiargebirges. *Zeitschr. d. Deutsch. geol. Ges.* 8.
- Brocchi, G. B. 1814. *Conchiologia fossile subappennina con osservazioni geologiche sugli Appennini*. 2 vols., Stamperia Reale, Milano.
- Dautzenberg, Ph. 1927. Mollusques provenant des campagnes scientifiques du Prince lbert I de Monaco dans l'Océan Atlantique et le Golfe de Gascogne. *Result. Camp. Scient. Pr. Alberta I de Monaco*, fasc. LXXII, 400 pp., 9 pls.
- Davoli, F. 1982. Cancellariidae (Gastropoda). In E. Montanaro Gallitelli (ed.). Studi monografici sulla malacologia miocenica modenese. Parte I - I Molluschi tortoniani di Montegibbio. *Palaeont. Ital.* 72 (n.ser. vol. 42):5-73, 7 pls., Pisa.
- Glibert, M. 1952. Faune malacologique du Miocene de la Belgique. II. Gastropods. *Inst. Roy. Sci. Nat. Belg., Mem.* 121:1-197, 10 pls.
- . 1960. Gastropodes du Diestien, du Scaldisien et du Merxemien de la Belgique. 4me Note. *Inst. Roy. Sci. Nat. Belg., Bull.* 36(33):1-44, 2 pls.
- Harmer, F. W. 1918. The Pliocene Mollusca of Great Britain. Part III. *Palaeontographical Soc.* 70:303-461, pls. 33-44.
- Hörnes, R. & M. Auinger. 1890. Die Gastropoden der Meeres-Ablagerungen der ersten und zweiten Miocänen Mediterranstufe in der österreich-ungarischen Monarchie. *Abhdlg. Geol. Reichsanst.* 6.
- International Commission on Zoological Nomenclature. 1985. International Code of Zoological Nomenclature, 3rd Ed. pp. i-xx, 1-338. London.
- Janssen, A. W. 1983. An account of the Cancellariidae (Gastropoda) of Winterswijk-Miste (Miocene, Hemoorian), The Netherlands. *Scripta Geol.* 68:1-39, 6 pls.
- Jeffreys, J. G. 1885. On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70. (Part IX). *Proc. Zool. Soc. London*, 1885:27-63, pls. 4-6.
- Jousseume, F. P. 1887. La famille des Cancellariidae. *Le Natural.*, ann. 9, 2e ser., pp. 155-157, 163, 192-194, 213-214, 221-223.
- Kautsky, F. 1925. Das Miocan von Hemmoor und Basbeck-Osten. *Abh. preuss. geol. Landesanst., N.F.* 97:1-255, 12 pls.
- Lamarck, J.B.P.A. 1811. Suite de la détermination des especes de Mollusques testaces, *Voluta. Ann. Mus. Nat. d'Hist. Nat.* 17:54-80.
- Malatesta, A. 1974. Malacofauna pliocenica umbra. *Mem. Carta Geol. It.* 13:XI+498, 32 pls., Roma.
- Nordsieck, F. 1968. *Die europäischen Meeres-Gehäuseschnecken (Prosobranchia) vom Eismeer bis Kapverden und Mittelmeer*. 268 p. Gustav Fischer. Stuttgart.
- Nordsieck, F. & F. G. Talavera. 1979. *Moluscos Marinos de Canarias y Madera (Gastropoda)*. 208 p., 46 pls. Tenerife.
- Sacco, F. 1894. I molluschi dei terreni terziarii del Piemonte e Liguria. Pt. XVI (Cancellariidae). *Mem. R. Accad. Sc. Torino*, Clausen Ed., 78 pp., 3 pls., Torino.
- Sieber, R. 1936. Die Cancellariidae des niderösterreichischen Miozäns. *Archiv. Mollusk.* 68:65-115.
- Sowerby, G. B. 1832-33. The Conchological Illustrations. *Cancellaria*. Pts. 9-13. London. 5 pls. with explanations + catalogue, 10 pp. (Pts. 9-12, figs. 1-35, published 1832;

pt. 13, figs. 36-44 and catalogue published 1833).
Sykes, E. R. 1911. On the mollusca procured during the

"Porcupine" Expeditions, 1869-70. Supplemental Notes,
Part IV. *Proc. Malac. Soc. London* 9(6):331-348.

ON THE TYPE SPECIES OF *METULA* H. & A. ADAMS, 1853:
BUCCINUM CLATHRATUM A. ADAMS AND REEVE, 1850
(GASTROPODA: BUCCINIDAE)

William K. Emerson

Department of Invertebrates
American Museum of Natural History
New York, New York 10024

ABSTRACT

The type species of Metula H. and A. Adams, 1853: Buccinum clathratum A. Adams and Reeve, 1850 (not Kiener, 1834, nor Anton, 1839) is determined to be referable to Metula amosi Vanatta, 1913, from the tropical eastern Pacific. The genera Acamptochetus Cossmann, 1901; Antemetula Rehder, 1943; and Colubraria Kuroda and Habe, in Kuroda, Habe, and Oyama, 1971, are placed in the synonymy of Metula.

The "*Metula* problem" has long been the concern of workers dealing with these buccinid gastropods owing to the uncertain nomenclatural and taxonomic status of the type species of this genus-group taxon (E. A. Smith, 1904; Woodring, 1928; Tomlin, 1927; Rehder, 1943; Altena, 1949; Knudsen, 1956; Cernohorsky, 1971; Olsson and Bayer, 1972; Kilburn, 1975; and Houbrick, 1984). This note undertakes to solve these questions.

The type of *Metula*, *Buccinum clathratum* A. Adams and Reeve (1850, p. 32, pl. 11, fig. 12), was stated to have been dredged off the Cape of Good Hope, in 136 fathoms [248 meters] during the 1843-1846 voyage of the H.M.S. "Samarang". Tomlin (1927, p. 160), in his review of the South American mollusks of the "St. George" Expedition, however, noted that this species was: "Originally described from deep water off the Cape, but that locality, like many others in the 'Samarang' work, is certainly erroneous." Furthermore, Tomlin (1927, *op. cit.*) concluded that this taxon was referable to specimens in his collection from Balboa, Panama, which he identified as "*Metula clathrata* (A. Ad. & Rve.)". Because later workers have largely ignored or questioned the identity of *Buccinum*

clathratum A. Adams and Reeve, 1850, the type species of *Metula* H. and A. Adams, I examined the holotypic specimen of this taxon, which is in the British Museum (Natural History).

The specimen labeled as holotype of *Buccinum clathratum* (BM(NH), 1874.12.11.145; here illustrated, figures 1, 2) is 25.3 mm in height. The original polychrome illustration of the type (A. Adams and Reeve, 1850, pl. 11, fig. 12) depicts a specimen of the same size as the holotype, which is now faded and has a chip on the anterior portion of the outer lip.

As Cernohorsky (1971, p. 149) has pointed out, *Buccinum clathratum* (A. Adams & Reeve, 1850) is twice preoccupied (not Kiener, 1834, p. 101, nor Anton, 1839, p. 91). Fortunately, a replacement name is not required, as *Metula amosi* Vanatta (1913, p. 22, figs. 1, 2; Keen, 1971, p. 566, fig. 1133; Olsson and Bayer, 1972, pp. 906, 907, figs. 1, B-D) is an available junior synonym of this taxon. The most common of the Panamic *Metula*, this species ranges offshore from the Gulf of California to Panama Bay. Although large specimens attain more than 44 mm in height, mature examples of *M. amosi* in the American Museum of Natural History (AMNH) collection from Mexico and Panama